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EFFICIENT ORGANISATIONAL RENEWAL: THE ROLE OF TECHNOLOGICAL AND MANAGEMENT INNOVATION

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ABSTRACT

Over the past few decades, scholars around the world have produced a vast body of research and writing on innovation. Most of this has focused on various aspects of technological innovation, but recent publications have shown the processes of management innovation enabling the efficient adoption of technological innovation. In Europe, several hundred thousand firms could benefit from these results. This paper explores what inhibits the implementation of technological innovation from the management science perspective. We used an exploratory research approach, through a multi-level case study (observation, document analysis and interviews) of a machinery company. We found that management innovation must take place before technological innovation to achieve the desired efficiency growth. Close inter-organisational networks and a change agent are also required to catalyse the processes.

***KEYWORDS:** Efficiency, Organisational Renewal, Management Innovation, Organisational Innovation, Technological Innovation, SME*

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Original Article

INTRODUCTION

The aim of this research is to help us see the characteristics of innovative activities in a new light, identifying traps in innovation strategy that can set back the efficiency of operational work. We used one selected company to demonstrate employee attitudes and roles in technical and non-technical innovation processes at different organisational levels.

The research is based on monitoring and in-depth interviews, and shows how problems in adoption of technological innovations occur mainly because of the failure of the organisational background. In particular, one company function lacking organisational innovations inhibited the full development and implementation of a technological innovation. In research on competition, Szabó (2014) found that companies in a domestic environment mainly focused on “know-how”, the professional aspects of competition. According to Hortoványi (2011), product and technological innovations are dominant in domestic SMEs, and leaders mostly associate the term ‘innovation’ with large-scale investments.

During this study, we also noticed this technology- and product-focused tendency, although truly successful companies place great emphasis on knowledge and continuous renewal. Competition research also highlights the role of flexibility and R&D in creating and maintaining a competitive edge, especially in partnership relations (Demeter, 2012:6). This study shows the feasibility of such organisational innovations delivered through

networks of partners, focusing on external and internal change management.

Technological and Management Innovation

Technological innovation, in a narrower sense, is everything that arises as a new idea in the fields of physical devices, equipment or systems and techniques (Volberda *et al*. 2013:5). In a broader sense, we mean both product innovations and renewal of production processes. Measurement is harder for non-technological innovation, because it often consists of non-tangible, tacit processes (Teece 1980 cited in Birkinshaw *et al*. 2008). To clarify the definitions, we used the work of Volberda et al. (2013) and Damanpour and Aravind (2011), identifying three main typological groups. The first was based on the Oslo manual, which identifies four different types of innovation: product, process, marketing and organisational. On the basis of an OECD report, organisational innovation covers new ways of organising the company's business model, management practices and systems. It also includes new solutions involving collaboration with external partners (OECD 2005). This means organisational innovation is more important than the other three, process innovation being about production or delivery method (OECD 2005).

According to the second grouping, organisational innovation is a broader term, including any type of innovation that happens within the organisation (Crossan/Apaydin 2010 cited in Volberda *et al.* 2013). This view originates partly from a socio-technical approach, which says the organisation is composed of two cores, administrative and technical (Daft 1978), and that organisational innovation therefore includes administrative and technological changes (Daft 1978 cited in Volberda *et al*. 2013; Kimberly/Evanisko 1981).

Our third group is based on Damanpour and Aravind's (2011) work. They expanded on Edquist's (2001 cited in Damanpour/Aravind 2011) typology. Edquist added two types of process innovation, administrative and organisational, to product innovation. Organisational process innovation is closely linked to leader innovation, which has three types, administrative, organisational and management innovation (Damanpour/Aravind 2011). In this study, following the work of Damanpour and Aravind (2011), we use the term innovation to mean all three types of innovation:

- Organisational innovation provides the broader category because it includes changes in organisational structure and processes that promote growth. These include innovations in organising in-house business activities, and human resources (Edquist 2001 cited in Damanpour/Aravind 2011).
- Administrative innovation is a narrower category than organisational innovation, and includes innovations such as information systems, which are indirectly linked to the organisation's core activity (Kimberly/Evanisko 1981 cited in Damanpour/Aravind 2011). In contrast with product innovation, administrative innovation is not driven by the satisfaction of customer needs, but the need to improve the efficiency of the company's management and administrative systems (Kimberly/Evanisko, 1981 cited in Damanpour/Aravind, 2011; Damanpour/Evan 1984). The rules for resource allocation, labour recruitment and structuring of tasks also belong in this category (Daft 1978 cited in Damanpour/Aravind 2011). These innovations are closely linked to the company's system of rules (Tanninen *et al.* 2008, Damanpour/Evan 1984 cited in Damanpour/Aravind 2011).
- More recently, the use of the term management innovation has gained popularity. According to Hamel (2006), management innovation relates to changes in the work of management. The literature agrees on management innovation: it is innovation in management practices, techniques, processes and organisational structures that are essential to achieve organisational goals (Birkinshaw *et al*. 2008). Academics do, however, have different views

on the extent of novelty, from the most advanced and innovative management techniques for industry (Birkinshaw *et al.* 2008), to the implementation of new executive processes for the company (Vaccaro *et al.* 2010 cited in Damanpour/Aravind 2011).

The three expressions are closely connected and even overlapping, as structural changes in the organisation can be classed as either organisational or management innovation, depending on the level of the organisation. The border is similarly blurred between management and administrative innovation, because administrative innovation includes changes in administrative management activities (Tanninen *et al.* 2008 cited in Damanpour/Aravind 2011).

The relationship between technological innovation and management has been a priority especially in recent years. After the early emphasis on technological innovation, it has now been shown that they rarely operate in isolation, but they are supported by other types of innovation (Rosenberg 1979 cited in Battisti *et al.* 2015; Damanpour/Evan 1984; Hollen *et al.* 2013).

Factors Influencing Management and Technological Innovations

The basis of our theoretical research is an integrative model created from the most significant literature on management innovation. Volberda *et al.* (2013) mentioned the history required for management innovation, especially at the process level, focusing on the managerial attitude and the external conditions of the organisation. The model also includes the relationship with technological innovation, and their joint or separate outcomes.

Managerial Antecedents

The relevance of leadership as an input of innovation is worth highlighting. For successful innovation, the support of the executives and management within the organisation is essential (Zmud 1984; Fitjar *et al.* 2013). Based on the model of Volberda *et al* (2013), both transactional and transformational leadership styles have a positive effect on management innovation. Management innovation also depends on the leader’s qualifications and experience, the entire senior management team’s ability to reflect, and the CEO’s attitude to novelty and change. Hortoványi (2011), during interviews with SME managers, found that the leader’s risk-taking attitude had a positive effect on the company’s incentives to innovate. Interestingly, observing the exploitation of opportunities, both entrepreneurial and administrative leaders proved to be persistent in finding and testing ideas (Hortoványi 2009). Innovativeness among senior managers can, however, set back the entire company as much as it can be the engine of development, because the continuous search for information can take energy away from fulfilling other management functions (Qiang Li *et al.* 2013).

Intra-Organisational Antecedents

Apart from leadership, previous studies also discussed the role of the organisation’s internal, micro parts in supporting management innovation. The model therefore includes skilled labour, and the organisation’s implementation and diagnostic capability. Internal change agents, at all levels of the hierarchy, also play a crucial role in the acceptance and efficient implementation of innovation (Birkinshaw *et al.* 2008 cited in Volberda *et al*. 2013). The model does not mention that an organisation complicates the acceptance of technological innovations by preserving existing routines and management tools, which leads to insufficient knowledge-gaining (Khanagha *et al.* 2013:53). A highly-skilled workforce can contribute to innovation, if it is technology-related. Launching innovations is the job of top management, while their acceptance is the function of those lower in the hierarchy (Daft 1978). The model does not discuss organisational structure, which affects the company’s adaptation to its environment (Dobák/Antal 2010).

Inter-Organisational Antecedents

Knowledge acquired from external resources can be crucial to management innovation (Volberda *et al*. 2013). Strategic allies can guarantee both time gain and competitive edge during developments (Tari 1996). These days, companies tend to have multiple horizontal allies, seeking co-operation in several areas and combining the different advantages from each partnership (Tari 2010). One characteristic of management innovations is that they appear mostly in inter-organisational agreements, because in contrast to technological innovation, the necessary management skills may not be available within the organisation (Whittington *et al.* 1999 cited in Hecker/Ganter 2013). Ferincz's (2012) research on the relationship between innovation and partnership, however, found the opposite. The disruption of a partnership with a former commissioner induced changes in the organisation, which in some cases stimulated innovation. Examining the relationship between organisations, the entrepreneurial role of the company's leader is key in exploiting the advantages from external relations (Ferincz 2012).

The relationship between organisations can play the role of external change agent, and embed external networks. Based on Hollen's (2013) work, innovation can also be facilitated by interactions of early users. Our research suggests that an external change agent's role in promoting innovation need to be clarified. Ideas from the external environment, including outside the industry, can shape a company's internal systems (Birkinshaw *et al.* 2008), but do not guarantee the proper adoption of the vision or the success of the innovation. Similarly, external advisors without an organisational constructive function will make little contribution to the implementation of change.

Contextual Factors

Contextual factors are the most relevant part of the model to our research, because a lot of effects depend on the company's context, and a change in context will influence management innovations. Previous research studied the effects of organisational size, environment and declining performance on innovation, and came to different conclusions. The most controversial factor was the company's resource endowment. Some authors found that a lack of resources encouraged innovation (Nickell *et al*. 2001 cited in Volberda *et al*. 2013), while others found the opposite, highlighting the lack of financial resources (Némethné 2011; Sára *et al.* 2014). Szabó (2014), observing companies' environmental uncertainty, came to the conclusion that a company's perception depends on its export orientation, ownership type and scope of activity. Doubts stemming from the organisation's leadership are also significant, and therefore worthy of attention (Szabó 2014). Bigger companies are better able to anticipate or even influence the changes in the environmental conditions (Szabó 2014).

Outcomes

Innovations in management tools and processes are beneficial to the efficiency and effectiveness of organisational processes (Birkinshaw *et al.* 2008 cited in Volberda *et al.* 2013). To measure these, companies use both performance indicators and 'soft' factors such as customer satisfaction and motivation of stakeholders, including employees. According to the growth paradigm of Penrose (1959 cited in Dobák *et al.* 2012), growth is not only quantitative but also qualitative. Considering the outcome of innovation on an organisation's management ability therefore suggests that changes can occur through the learning process. Work-based learning can succeed if it is a calculated and long-term strategic goal, and has the support of a change management program (Dobák *et al.* 2014). A piece of quantitative research by Szabó (2014) suggests that companies primarily seek financial stability, followed by efficiency, market share and lobby force (Szabó 2014).

Looking outside the company, and observing entrepreneurial leaders, Hortoványi (2012) found that technological innovation alone does not create social value. Only entrepreneurial leaders could convert innovation into significant value to both business and society (Hortoványi 2012).

METHODOLOGY

This study used case study methodology and multilevel observation lasting more than six months. During this period, as active observers, we collected data from a medium-sized enterprise active in domestic metal-working, using multiple sources and techniques. We used document analysis to review all documentation from within the company, including 82 job descriptions, and also undertook more than 1,000 hours of surveillance work. The core of our research was provided by over 300 interviews (with multiple iterations) with employees and managers working at different levels of seniority. The methodology made it possible for us to compare, in real time, the efficiency of the manifestations of innovation at different levels.

In an already well-studied area of research, a case study methodology—a new kind of perspective on research—is an excellent tool (Eisenhardt 1989) to monitor a familiar topic. The methodology is all the more appropriate in our research, because we can examine closely the deeper relationship between technological and management innovations within the different levels of the company. Based on Suddaby (2006 cited in Khanagha *et al.* 2013), we did not determine any premises, although after each collection round we iteratively returned to the literature, connecting practical experience to existing theories. The multi-level approach made it possible to observe complex social fibres and behaviour patterns, providing a deeper understanding of the organisation's performance. This is particularly important when examining strategically-important innovation activities, because their complexity requires both macro and micro-level approaches (Hitt *et al*. 2007).

Through long-term observation, we have been able to develop a deeper understanding of the context, resulting in an increase in the probability of encountering random events in the daily lives of the observed companies (Fernandez 1986, cited in Marion *et al.* 2015).

Collection of Data

Data collection was performed using different independent sources, to eliminate any distorting effects (Yin 1989 cited in Tóth 2004). The main source was the interviews, but we also used documents, archives, regulatory information and job descriptions. When choosing the interviewees, we selected senior staff involved in decision-making, but we also wanted to explore employees' opinions and roles, through direct observation. By interviewing employees working on different functional areas, at different hierarchical levels, we could ensure diversity in point of view, which gave us a conceptual framework for the research (Davis/Eisenhardt 2011 cited in Peeters *et al.* 2014).

With field observation, we were able to collect factual data, and also examine the subjects' behaviours and responses, which is essential to developing a novel view on the research topic (Davis/Eisenhardt 2011 cited in Peeters *et al.* 2014). Interpretations were then made from the collected data, including through comparison of information (Ware *et al*. 1999).

Based on the experiment of Király *et al* (2014), participatory modelling has both advantages and limitations:

Advantages

- Participatory modelling is exploratory, and allows deep understanding of the company's position;
- Visualisation provides a neutral communication tool;
- It simplifies the documentation of the thought process, helping it to become understandable and easy to follow for participants; and
- It enables the synthesis of cognitive schemas at various professional levels.

Limitations

- Acquiring the necessary mindset is difficult for participants, making application more difficult;
- The visualisation may contain simplifications, which results in examining the suggestions as a whole, and not going deep into the various phenomena; and
- The sampling meant we were not examining all companies in the machine industry, only organisational factors for this case.

Justification for the Selection of the Sample

When selecting the company, size was very important, because we needed to be able to separate four different organisational levels. These four layers were:

- Top management and owners;
- Upper–middle management layer (M1: managers, performing an advisory function);
- Lower–middle management layer (M2: team leaders, plant managers); and
- Factory workers

During the interviews, we tried to sample in line with the proportions of each group within the company, which we achieved on the upper three levels, and reached more than 95% for factory workers. Those on permanent leave, ill, or on maternity leave, and some temporary or interim staff and students were excluded.

PRESENTATION OF THE CASE

Managerial Antecedents

The CEO has received no formal management training, but has learned on the job, from practical experience. He is an open, fast learner, and logical thinker, who can be easily guided, but unfortunately also influenced. He can be convinced by reason, he is very hard to fool and he learns from his mistakes.

The key to successful management innovations is management support (Zmud 1984; Fitjar 2013). As CEO, he faces the same problems on innovation as lower-level managers. Introducing innovations takes time away from operational tasks, draining precious energy from other important management functions, and from the monitoring of external markets (Qiang Li *et al.* 2013).

Entrepreneurship is strongly associated with innovation (Hortoványi 2011). From Vecsenyi's (2010) grouping, the CEO is an entrepreneurial leader, with high propensity for innovation and creative ideas about technology. The large number of partnerships is mainly due to him. As an entrepreneurial leader, he is able to learn from his mistakes (Hortoványi 2009), as exemplified in the restarting of management innovations after initial failure, and in the subsequent organisational changes.

The M1 layer as a senior (top) management team has a key role in helping the CEO with innovations (Volberda *et al*. 2013). In this company, however, they do not put forward innovative management proposals. This layer contained the biggest anomaly between real and perceived levels of innovation.

At the M2 level, the basic problem is that the selection of middle managers is counter-productive. Having no formal leadership training or assessment system, the company tends to promote the best professionals. This means that team leaders retain a "worker's eye", but it also makes it against their interest to encourage their best employees, and improve work processes, because then someone else may be promoted in their place.

The factory workers feel themselves even more distant from any non-technological innovation introduced by senior management. Their demotivation strengthens as their frustration increases, primarily because of poor flow of information, and distortion between hierarchical levels. Even middle management no longer sees the sense in innovation, so its implementation cannot be properly managed.

"Information starts from up here, then several people use filter systems, so that the people at the end don't get the information they need. (…) In general, the message to people is that they need to do it." (CEO)

Intra-Organisational Antecedents

Without innovation from the lower levels, the management focus is on technological innovation instead of management innovations. To reverse this, the company needs to eliminate internal barriers. We suggest that the shift in types of innovation is not necessarily a problem, if the company can successfully replace the missing management innovations. To do this needs internal reorganisation or the use of outside help. During the two decades of the company's operation, it has been driven largely by developments in technology, with little or no organisational innovation.

At the M1 level, the organisation is functional, with nine middle managers below the top manager. This does not, however, mean that real leaders occupy essential positions. The leaders are not familiar with management studies, but are all practical professionals, who have risen to their positions because of their outstanding work in their field. The lead for each function should be interested in introducing more far-reaching initiatives, particularly a total quality management (TQM) system, but instead, they tend to exercise control inappropriately. They also perceive the implementation of new technology developments as a burden, and as already discussed, this therefore requires time and effort. They are still involved in the operational processes, and it is therefore more difficult for them to take on conflict and press for innovation. The fact that they lack a clear leadership role further exacerbates the problems.

Information asymmetries are quite large between functions. The necessary information does not move from one area to another. Leaders do not know how to precisely define the necessary information for a more efficient operation, so they cannot call anybody account for that information. Without a standard enterprise resource planning (ERP) system, they are forced to manage through personal control.

The fragmented operation, and the island-like systems and processes are well-shown in the use of independent IT systems across functions. The company is now planning to introduce a comprehensive ERP system, building on the current inventory and billing system by adding new modules.

At the M2 level, the work organisation problems mentioned above, which are reflected in the work of the factory operators, are one of the primary sources of unclear responsibilities. It is not clear which matters are the responsibility of the production manager, and which should be managed by team leaders. Conflicts are common, problems are solved using quick fixes, and with the high frequency of errors, require a lot of time to correct them. The resulting frustration hinders the work ethic. As professionals, they organise work in an *ad hoc* way, using informal communication, often violating other shift leaders' authorities.

Problems within the organisation manifest themselves at the lowest level, because this is where most of the company's operational activities occur. The lobbying ability of the factory workers is a lot lower than their managerial colleagues. The symptoms therefore appear particularly strongly along the production line, resulting in:

- Material shortages;
- Lack of equipment needed for production;
- Quality problems after the preparatory phase;
- Capacity problems;
- Inefficient work organisation;
- Lack of control phases.

The employees receive instructions from several different people, also contributing to these problems, so that frustration and *ad hoc* working are common. The workers cannot carry out the necessary self-checks, so all responsibility falls onto the internal control system, resulting in many defective products, and time delays. It is a question, though, how much of this is the workers' fault, and to what extent they can be blamed for taking advantage of not having a permanent and clear management framework to remove what they see as unnecessary burdens on their work.

Inter-Organisational Antecedents

In this area of machinery production, trust between supplier and customer is very important. Customers have serious quality standards and highly individual requirements, for which serious systems, routines, machinery and assets are necessary. This is illustrated by the process for a new order: the production of the first prototype requires coordinated operation of all functions. The preparation of the product is monitored to millimetre accuracy during the process, and the final product contains no errors. The first three to five orders of a product count as prototypes and products are only transferred to series production after this.

Long-term relationships are typical in the market. Customers tend to look for partners with whom a business relationship could be deepened, creating a key supplier relationship. This requires appropriate capacity, equipment and machinery, labour force and comprehensive internal processes, to provide the required PPM (products per million) and quality, and adherence to delivery dates.

The CEO’s personal charm plays a major role in the organisation's external relations. When big problems arise, his help is sought. Providing management experience and external expertise, which are essential to the implementation of management innovations, legitimises innovations (Birkinshaw 2006), whether the external expert remains present, on a permanent or interim basis. The CEO has recognised the inadequacy of the company’s current systems and, which is even more relevant, he has recognised the limits of his own expertise. As an entrepreneurial leader, he provides essential input for the further renewal of his company, by using external resources.

In our view, the M1 level is the most suitable for change management and management innovation, because these leaders have the necessary authority to act as appointed top managers and give the innovation credibility with their seniority (Birkinshaw *et al.* 2008). Because of the organisational, control and monitoring issues discussed, an employee could not credibly perform this role, but could be replaced or supplemented by an external change agent. This person would legitimise the innovation process with expertise, and bring a more objective eye to the assessment of implementation, which is particularly important for management innovation as it supports handling uncertainties (Birkinshaw *et al*. 2008).

The sales department is nominally responsible for maintaining contact with partners, but their role is largely administrative, since in practice, most contact is with the CEO. Researching new partners and new orders is the sales manager’s job, and little other active sales activity occurs. The M2 level and the factory workers are passively present in the partner net. New types of technologies are used to meet customer expectations, when instructed by top managers, often incorporated alongside already-inefficient operational practices.

Innovations

For the CEO and other members of the organisation, innovation clearly means investments and extensive growth. By seizing opportunities from tenders, they have created a remarkable machinery park even on a European level, but the company’s internal systems do not support the total and efficient utilisation of these tools. The main reason for the earlier failure of management innovation efforts was that managers tried to use the same toolkit to innovate to address every problem. They focused on strengthening what seemed to be the most relevant technological line, so the complex view necessary for management innovations could not be developed. The M1 layer is busy handling problems through ‘quick fixes’ instead of trying to innovate. Only the three managers in the CEO’s circle of trust are involved in innovation activity, fulfilling a consultant role. The CEO therefore remains the main innovator, drawing on their advice and expertise. As previously discussed, informational asymmetry obstructs implementation of innovations, with managers refusing to accept the chosen ideas.

At M2 level, the leaders, directly managing up to 30–40 people, see the whole working process, but rarely initiate process innovations. Like those they manage, this level also sees innovative initiatives coming from above as unnecessary nuisances. Introducing administrative innovations to employees is part of their role, but is often overlooked because of the excessive technological focus. This layer is closest to the technology, because these managers use it daily. To encourage innovation at lower levels, the company has a reward system. After the initial pay-off period for an idea for rationalising production, the company pays a certain percentage of its gains to the owner of the idea. Our observations and interviews with staff showed, however, that few people exploit this opportunity. Most technological innovation is top-down, and because of the lack of coordination of work organisation, most workers experience this as overload. During the introduction of new technology, employees have often been taken from the production side to focus on implementation,

and production quality and efficiency have deteriorated as a result.

Contextual Factors

Having been operating for 20 years, the company is medium–large by European standards. It has developed a machine park, adapting to the changing environmental conditions, and with a strong corporate, multinational clientele, was able to get through the financial crisis. The same executive management has been in place throughout. Experience has therefore shown that the company could grow by harnessing technological improvements, so senior managers have become biased towards this approach. Recognising recent environmental changes, however, management innovations have been initiated in recent years, but have generally failed because of a shortage of knowledge, and entrenched schemes. The CEO, behaving as an entrepreneur, was watching the environmental trends, but the organisation's systems were not able to support his innovations.

It was typical for M1 and M2 levels that, as the organisation grew, more and more professionals became plant, shift or group leaders, and later top managers. This removed the skilled workers from the production line, to guide daily work without the necessary leadership skills. The process disorder and inefficiency discovered during our research would justify employees putting forward ideas about how to make their work easier. This, however, does not happen, because the workers are unmotivated and because there is no culture of innovation. There are therefore hardly any bottom-up technological, especially process, innovations put forward for managerial assessment. Across the various production lines, we saw slight differences on innovation. The different lines make products for different customer bases. Based on our observation, the leaders tended to focus on those lines where the customers required higher quality standards and improved control systems. On these lines, performance is better, but looking over a longer period, this has led to a culture of innovation and efficiency as long as leaders' attention is concentrated on that area, but when their focus changes, efficiency and innovation stop.

Outcomes

The actions and innovations mentioned above have made the company known all over Europe, with a huge clientele. These advantages, however, do not carry through to income, because of the internal disorganisation.

Most initiatives fail. A senior manager invents something, the others agree to it, but it is never implemented. There are delays, and after initial adoption, senior managers deny its legitimacy. When innovation is unsuccessful, as with one management innovation, the management did not pursue the changes, but settled back into the old system, and started a new technological innovation instead.

The M1 level generally supports the executives, but the appointed change agent was unable to provide the growth of performance and the dynamic capabilities that should have been available through management innovations. Organisational resistance hampered the effectiveness of the work of the appointed agent, leading to failure.

The self-interest of M2 leaders is the main obstacle to innovation activities at this level. This also hinders lower-level learning and development and overall improvement of processes. Factory workers perceive top-down innovations as hindering production, because their focus is on solving operational problems on a daily basis. In the past, the company was able to grow with the help of product development, but there are now organisational barriers to extensive growth.

PRESENTATION OF RESULTS

The Story of a Specific Management Innovation: Creating a Lean Production Line

More recently, the CEO has started a few initiatives to improve matters, since he recognised that the various functions needed to work together. First, he tried to solve the problem of information asymmetry by organising meetings, which, however, proved completely pointless: there were no leaders at the meetings, they were too operational, no-one prepared for them, and there were no presentable, real data collected. The executives recognised that the company needed intensive growth and organisational development.

An international, financially-strong buyer asked the company to start using lean production principles, similar to the Toyota Production System. The buyer wanted to provide training for the necessary workforce and management by organising workshops and other sessions, but this ran into a complex problem.

During the training period, executives promoted an operational manager with good leadership skills to lead the initiative. He met with huge organisational resistance, so failed to implement the changes, and nothing was achieved. The CEO only saw the failure, so discarded the manager. Without institutional support, internal training guaranteed by the purchaser proved to be futile. The internal processes are not standardised, so a planning point could not be inserted, which would, in principle, plan the whole value creation process tailored to lean principles.

External or Internal Change Agent

Our observations identified two options for the successful implementation of management innovations: internal or external change agents. The advantages and disadvantages of each in this company are listed in Table 1.

[Insert Table 1 about here]

The main question is therefore which is the most appropriate solution for the company: nurturing an internal employee to support change management or bringing in an external resource such as a management expert?

From Table 1, and considering the advantages and disadvantages of each option, using an external resource is likely to be the most effective in ensuring smooth working. By using an interim manager, the disadvantage of having to ensure organisational fit can be avoided, because that person will not have a long-term role in the organisation. The top management plays a sponsor role in the innovation, while the outside participant operates as a change agent, the embodiment of control and inspection. The interim nature of the role makes it easier for managers to acknowledge and accept change agents. It is important to highlight, however, that using an outside expert alone does not count as management innovation, because without organisational support, the recommendations of the expert will never be incorporated in practice, which is the key element of innovation. Penrose (1959 cited in Dobák *et al.* 2012) examined the growth in corporations and highlighted that if organisations bring in external knowledge, it will take time until it matures within the organisation. It is therefore advisable to follow up changes made by the interim manager.

Management Innovation to Further Develop Empirical Models

The model presented in the theoretical section of this paper is in need of completion and fine-tuning (see Figure 1). The necessary antecedents to management innovation have different priorities, and many factors can be replaced or supplemented with different solutions. The commitment and support of the executive management and the senior (top) management team are essential. It is also necessary to find an external partner, to provide additional resource and expertise.

An internal change agent could be replaced or supplemented by an interim manager.

Further down the model, there is currently a shortage of management innovation in the company, so its interaction with technological innovation is not guaranteed. The sequencing of technological and management innovation was seen differently by different researchers. Hoffer and Ivány (2008) relied on Moore's view (2004), connecting the type of innovations with the market development life cycle. This suggests that business model and structural innovation should come after technological innovation. The benefits of organisational innovation also appeared stronger when technological innovation was introduced first (Battisti *et al*. 2015).

According to Mol and Birkinshaw (2012 cited in Volberda *et al*. 2013), however, management innovation must happen before technological innovation. Within the organisation, innovative adaptation is therefore the forerunner of technological acceptance (Damanpour/Evan 1984; Khanagha *et al*. 2013).

[Insert Figure 1 about here]

We suggest that management innovation should be combined with technological innovation, so that they strengthen each other (Hollen 2013), striking a balance between the two (Damanpour/Evan 1984) to create a coherent system. We did not notice these types of interactions in the company observed, because of the emphasis on technological improvements.

"It is such a development trend, we started to manufacture, to produce, to research, to plan with a different approach, in both technology and products." (CEO on innovation)

We suggest that the model of Volberda *et al.* (2013) needs changes to both the content of each component element and their connections. The contextual factors not only affect the outcome, but also fulfil a determinative role in the precedents at a much earlier stage of the innovation process. For example, the performance slump seen in this case affected managerial attention, so took resources from the innovative initiatives. The measurement of the results of management innovation is more complex than for technological innovation, as it manifests as in learning and development, increased efficiency of processes, and customer satisfaction.

SUMMARY OF RESULTS

In the literature of innovation, a sharp shift has occurred, from a focus on technological issues to research on management and organisational innovation. To address today's problems, and the challenges of the rapidly-changing environment, companies need to reform their ideas of value creation, with the combination and mutual use of two types of innovations. Non-technological innovation is more difficult for others to copy (Teece, 2007), so it can give companies a competitive edge.

Implementation, however, leads to a number of barriers arising from culture and lack of experience for more than ten thousand companies in Hungary. It is therefore important for them actively to seek external cooperation. Selection of partners and building a knowledge base beyond their own industry are particularly relevant to the development dimension of learning and development. Several sources of expertise are available: suppliers, partners, customers, consulting firms and universities. Their support in the implementation of management innovation gives it a degree of legitimacy in the organisation, particularly when organisation members accept the new features and are able to effectively integrate it in their daily operations. Damanpour and Evan (1984) empirically proved that organisational innovation indirectly supports

technological innovations by providing a favourable ecosystem. We found in our case study that management innovation provides the soil and framework for the enhancement and implementation of new technologies.

CONCLUSIONS

In practice, many companies' successes have already demonstrated that administrative innovations are needed even in technology-oriented sectors. Multiple IT companies have built platforms to ensure continuous renewal within the company, even though they are also at the forefront of technological development. The long-term task of firms is, therefore, to create an ecosystem for constant and ongoing innovation, and not just innovative project-based activities, as this guarantees efficient innovation. An innovative culture can be embedded into everyday life, from the top down to the lowest level of the organisation, supporting these developments. To achieve this, however, will take time, especially for the company in this case study, because it will need to go through a socialisation process. External partners can be a great assistance in this, as they observe the process as change agents, and can support managers in the avoidance of traps.

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APPENDIX

Table 1: Advantages and Disadvantages of Internal and External Change Agents

	Pro	Contra
Internal resource	• Has full knowledge of the organisation. • The innovation and the acceptance of its role by members is easier. • System compatibility is easier.	• The internal organisation of operational work is necessary, so that promoting the best employee does not affect output. • Requires the provision of management training • Requires a longer time frame
External resource	• Wide choice of experts and consultants • Would have essential management-specific knowledge • Would legimitate innovation	• Alignment to the system is not guaranteed • Gaining acceptance among leaders is time-consuming

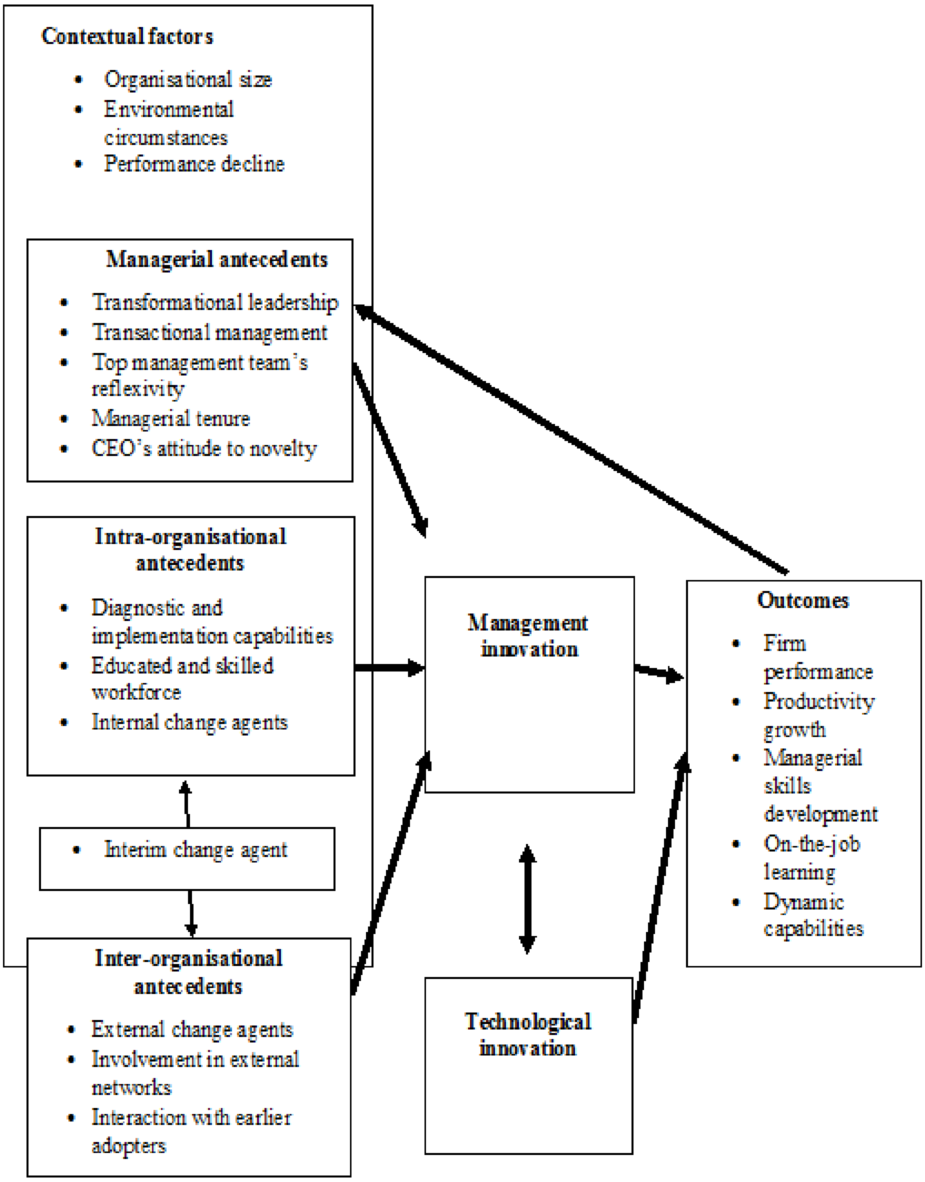

Figure 1: Integrative Model of Management Innovation (Based on Volberda Et Al. 2013 and Expanded)